

Serial Nr.: 10/644,946
Art Unit: 3725

03185-UPS

AMENDMENTS TO THE DRAWINGS:

FIG. 4(h) is amended to delete symbol "1B0" as marked in the attached annotated sheet of drawing.

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REMARKS

In the Office Action, claim 1 is rejected under 35 U.S.C. §103(a) as being unpatentable over Baek in view of Yagi et al. or Yagi in view of Baek, and claim 2 is rejected under 35 U.S.C. §103(a) as being unpatentable over Baek in view of Yagi et al. and further in view of Hale, Jr. et al.

The gist of the instant invention is to provide a method for manufacturing a seamless wheel rim to provide a wheel rim with higher strength, better performance and lower cost. Accordingly, an aluminum alloy plate is pre-cut into a circular plate and then shaped into a cup-shaped embryo body by a deep drawing die using a drawing process. After the bottom surface of the embryo body is punched out, the cup-shaped embryo body is put into an expanding-pressing female die which has an expanding die cavity respectively at both ends. By pressing and expanding both ends of the embryo body with two sets of expanding-pressing male dies, a seamless aluminum wheel rim is formed with first and second expansion parts. As can be seen from FIGs. 4(a)-4(i), the equipment used in the method includes only a deep drawing die, an expanding-pressing female die and two expanding-pressing male dies. The method does not require heating, forging or flow forming.

In the office action, the examiner rejects claim 1 on the ground that Baek discloses a method of drawing an aluminum alloy plate into a cup-shaped embryo body by a deep drawing die. Applicants respectfully contend that the rejection is unwarranted because Baek neither teaches nor suggests using a deep drawing die. As taught in Baek, "the billit

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is then heated to a forging temperature, ..., the heated metal piece is subjected to a forging procedure by means of a forging press machine 26 comprising a forging die 22 and a punch 24" (col. 3, lines 41-56). It is evident that the method of Baek is not a deep drawing process with a deep drawing die which does not require heating. Instead, Baek uses a heating and forging procedure to forge the billet into a cup-shaped preform 28. Applicants also like to point out that the cup-shaped embryo body of the instant invention has a first end being shaped into a cup-shaped cylinder and a second end being shaped into an embryo expansion part. Different from the instant invention, the cup-shaped perform 28 of Baek is imply a cup-shaped cylinder without an embryo expansion part.

Yagi et al. disclose a method of shaping a wheel rim by using an upper mold and a lower mold to punch a cylindrical body to form a wheel rim. Throughout the disclosure, Yagi et al. neither teach nor suggest "drawing a circular plate into a cup-shaped embryo body by a deep drawing die, said cup-shaped embryo body having a first end being shaped into a cup-shaped cylinder and a second end being shaped into an embryo expansion part".

From the forging comparison and analysis, it is clear that neither Baek nor Yagi et al. teach the subject matter of the present invention as pointed out above. It is not logical for a person having ordinary skill in the art to combine them and reach the instant invention. In response to the office action, claims 1 and 2 are cancelled and replaced with new claims 3 and 4 to better comply with the formality set forth in 35 U.S.C. §112 as

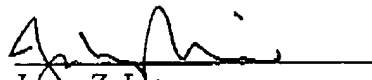
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well as clearly define the invention in a patentable way to overcome the rejection under 35 U.S.C. §103(a). Applicants respectfully submit that the new base claim 3 should be allowable because it distinctly recites the novel and non-obvious limitation "drawing said circular plate into a cup-shaped embryo body by a deep drawing die, said cup-shaped embryo body having a first end being shaped into a cup-shaped cylinder and a second end being shaped into an embryo expansion part". By virtue of dependency, the new dependent claim 4 should also be allowable.

With regard to examiner's objection to the drawings, FIG. 4(h) has been amended to delete the unnecessary reference symbol "1B0". The specification has been amended to include the description of the reference symbol "1B3" of FIG. 4(i). The objection to the drawings should now be overcome. The annotated sheet of the amended drawing FIG. 4(h) is attached for approval. The replacement sheet will be submitted by US post office mail to ensure adequate quality for patent publication after the application is allowed. The specification is also amended to correct a few editorial and grammatical errors. New claims 3 and 4 are now pending and in full condition for allowance. Prompt and favorable reconsideration of the application is respectfully solicited.

Respectfully submitted,


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Annotated sheet

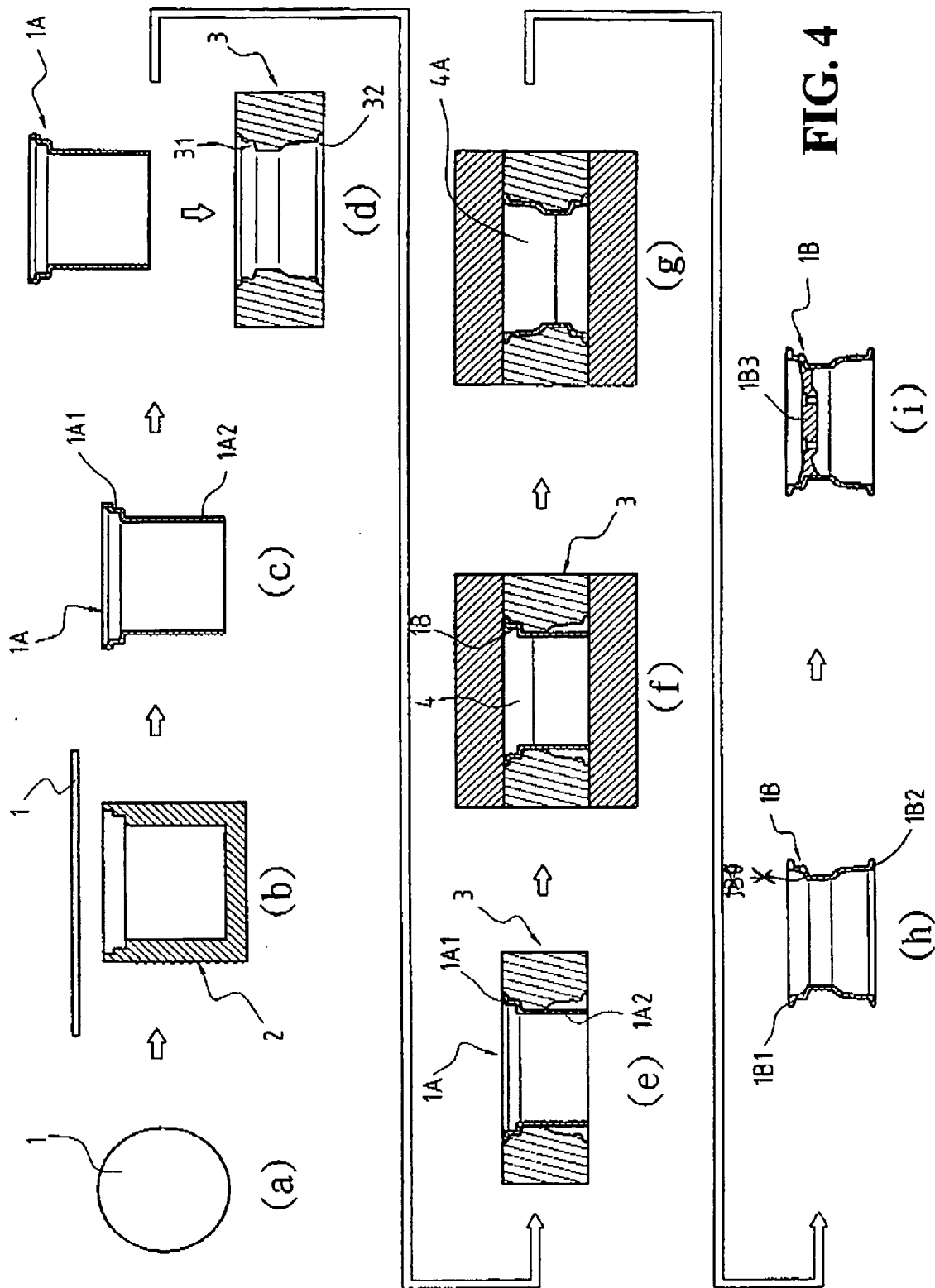


FIG. 4